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Effects of Nicotine on Interactions of Platelets and Endothelial Cells.

The overall aim of this research project is to delineate the effects of nicotine on interactions of platelets and endothelial cells. The investigators have shown that nicotine enhances aggregation of platelets induced by adenosine diphosphate. They propose to continue study of the effects of nicotine on the growth of endothelial cells in tissue culture.

In preliminary experiments, it has been found that nicotine inhibits the growth of cultured endothelium. In addition, the researchers propose to look at effects of nicotine on the enhancement of growth of tissue culture endothelial cells produced by addition of blood platelets. The effect of nicotine on the adhesion of platelets and other blood cells to endothelial cells in culture will be studied. Platelets and other blood cells will be applied to monolayers of cultured endothelial cells by controlled centrifugal forces, and then centrifugal force will be used to remove the less firmly adherent cells. Adherence of platelets and other blood cells to endothelial cells will be quantitated by direct microscopic count. Further, the possible effects of nicotine on the contraction of endothelial cells in culture will be studied. Such contraction of endothelial cells is brought about by addition of numerous substances including thrombin.

Finally, the investigators propose to determine the effects of nicotine on the action of an endothelial cell inhibitor of platelet function. This inhibitor has been investigated in the past and has been found to be a small but labile molecule. They are now able to stabilize this activity from endothelial cells and plan to investigate possible effects of nicotine on this inhibitor.

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